MASTER
M

SERVICE MANUAL
& PARTS LIST

ELECTRONIC KEYBOARD

DM-100



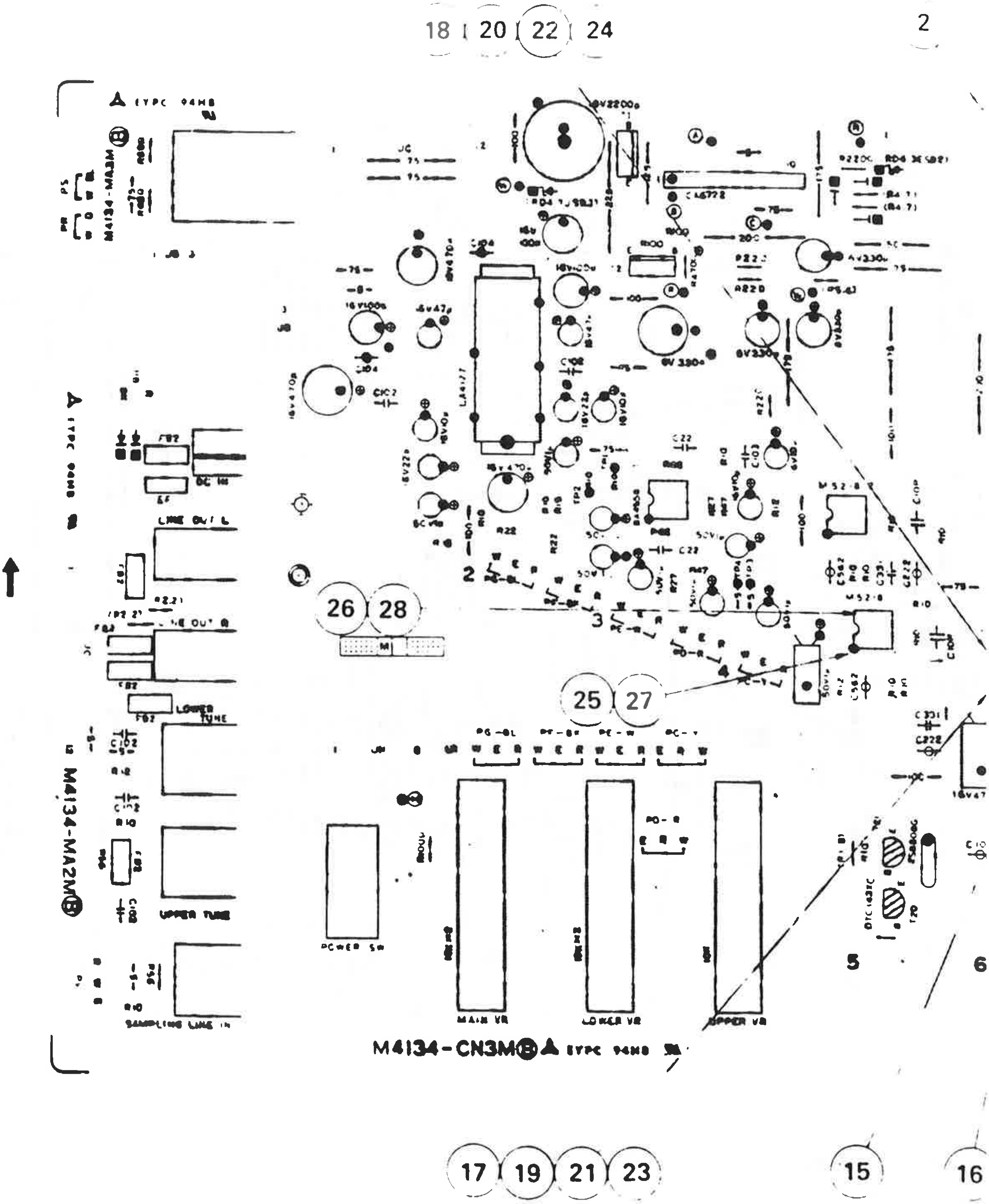
DM-100

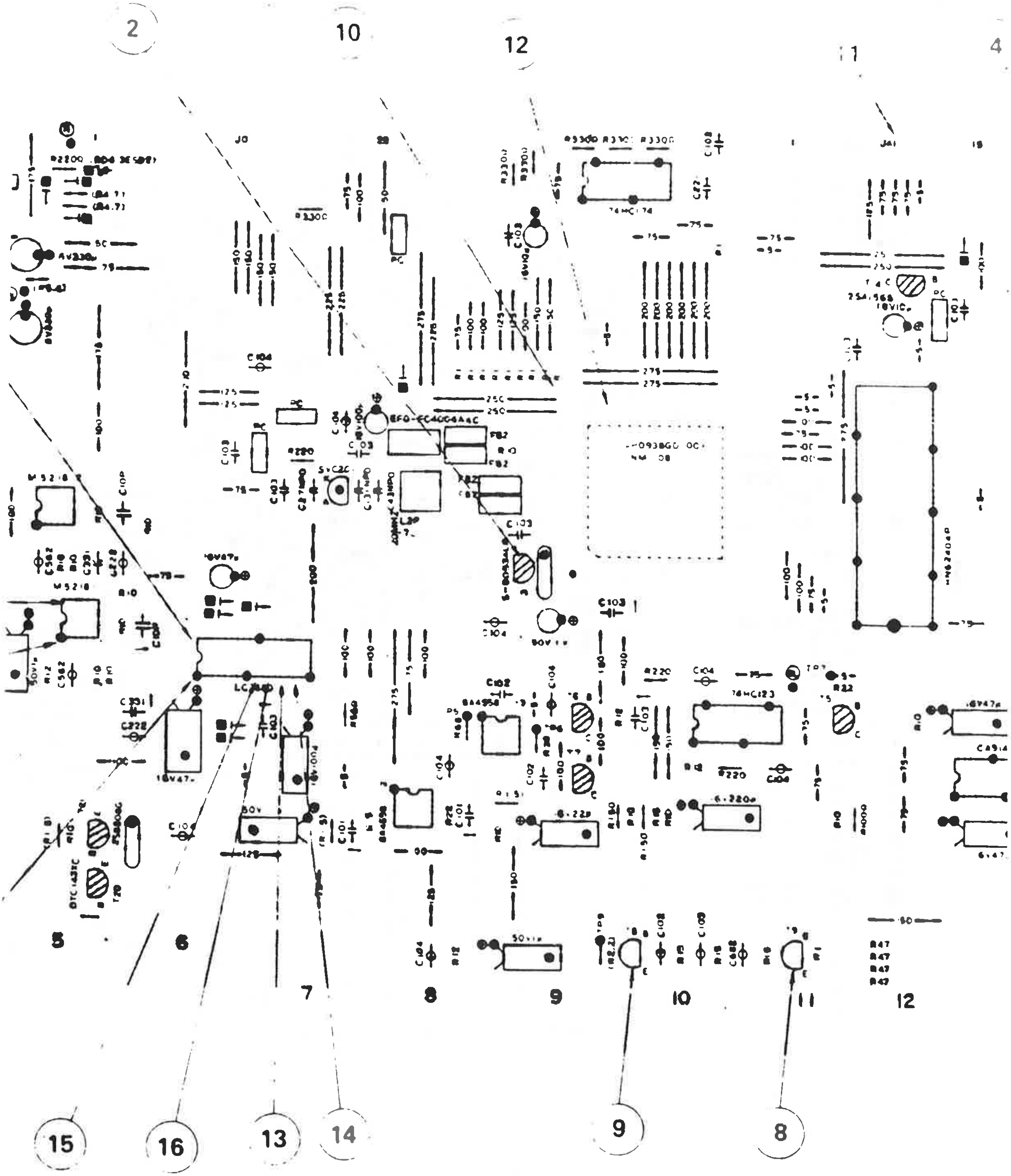
CASIO

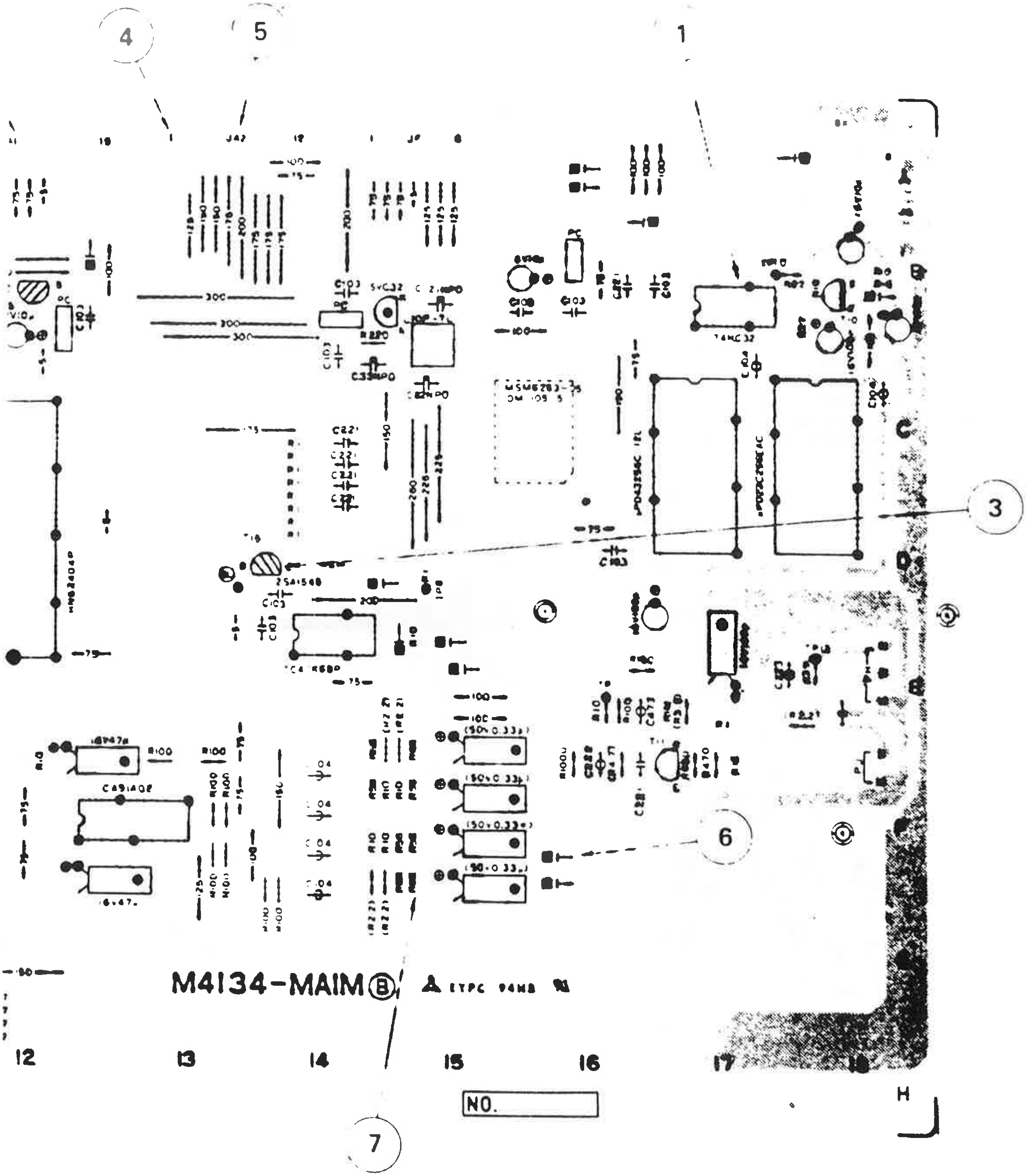
A1

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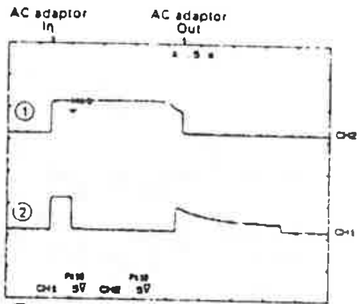
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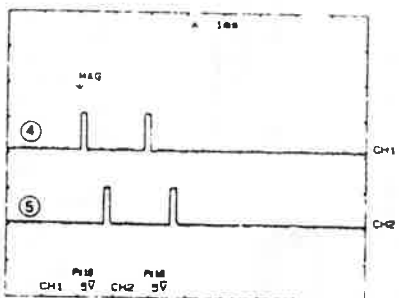

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MAJOR WAVEFORMS



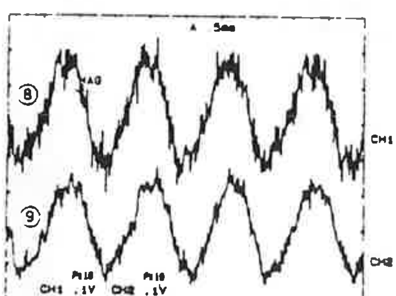
① Upper CPU Reset
74HC32 pin 11

② Lower CPU Reset signal
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④ KO1
PC Joiner "JA2" pin 1

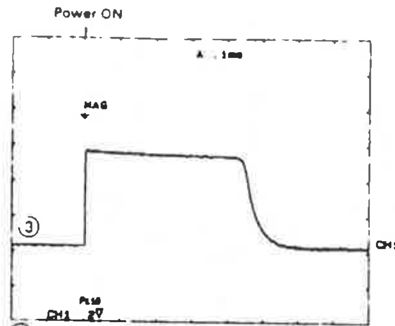
⑤ KO7
PC Joiner "JA2" pin 7



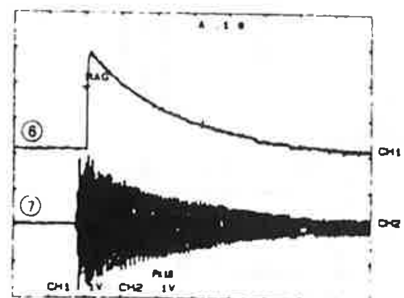
⑧ Upper Filter input
T9 Emitter

⑨ Upper Filter output
T8 Emitter

Upper Tone: Flute
Key: A2



③ Upper CPU MI signal
When Power ON

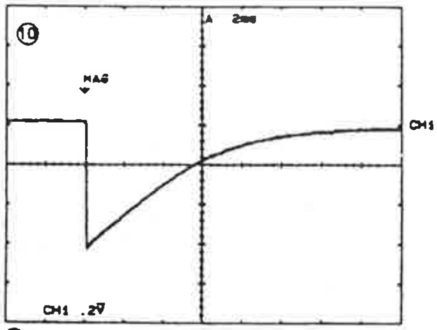


⑥ Signal EH
MSM6283 pin 89

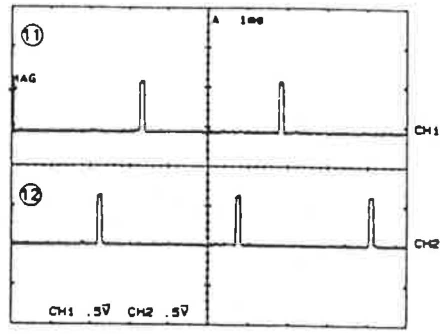
⑦ Signal SH
MSM6283 pin 93

Upper Tone: Piano

③

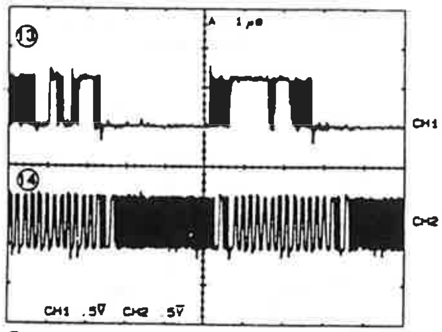


⑩Lower MI
μPD938G pin 6
Power ON



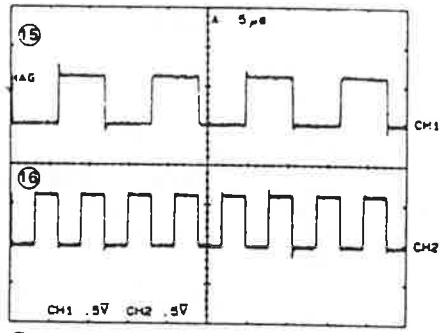
⑪ Lower Key scan signal KO9
μPD938G pin 44

⑫ Lower Key scan signal KO19
μPD938G pin 34



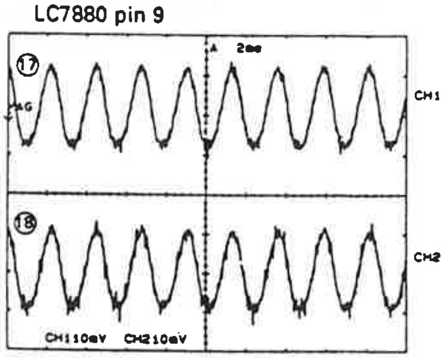
⑬DATA
LC7880 pin 8

⑭BCK
LC7880 pin 9



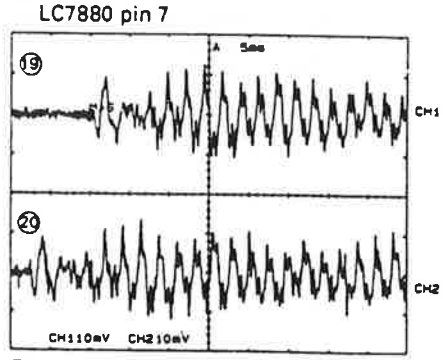
⑮LRCK
LC7880 pin 6

⑯WCK1
LC7880 pin 7



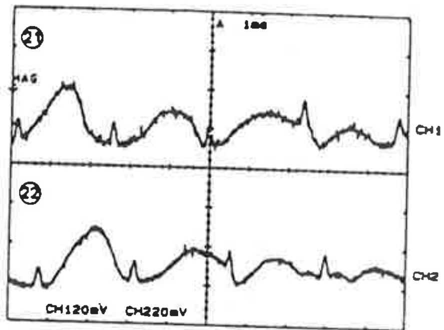
⑰ DAC output: LC7880 pin 1

⑱ DAC output: LC7880 pin 20
Tone: FLUTE
Key: A3



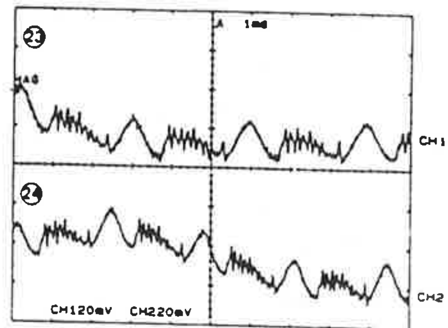
⑲ DAC output: LC7880 pin 1

⑳ DAC output: LC7880 pin 20
Tone: PIANO
Key: A3



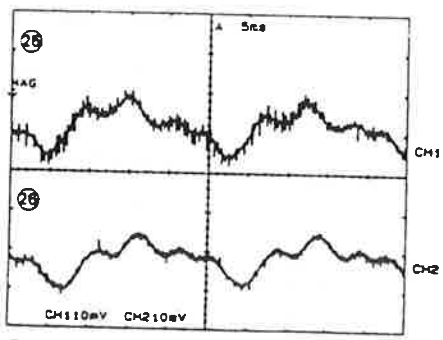
㉑ DAC output: LC7880 pin 1

㉒ DAC output: LC7880 pin 20
Tone: STREET



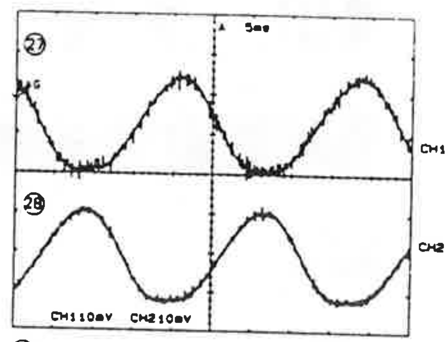
㉓ DAC output: LC7880 pin 1

㉔ DAC output: LC7880 pin 20
Tone: SPACE WARS



㉕ Lower filter output: M5218PR-1 pin 1

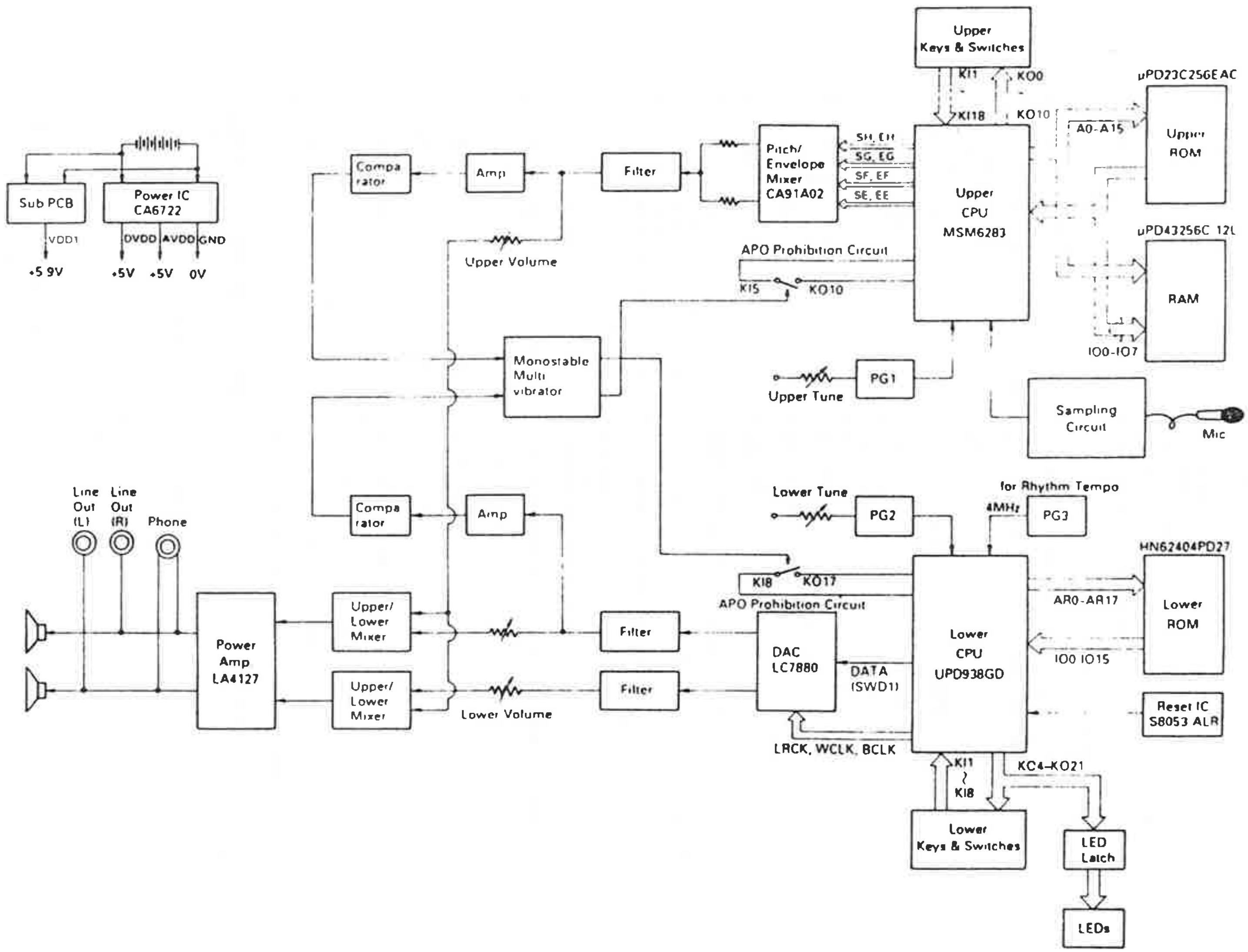
㉖ Lower filter output: M5218PR-2 pin 1
Tone: PIANO
Key: A3



㉗ Lower filter output: M5218PR-1 pin 1

㉘ Lower filter output: M5218PR-2 pin 1
Tone: FLUTE
Key: A3

BLOCK DIGRAM



UPPER CPU (MSM6283-05GS)

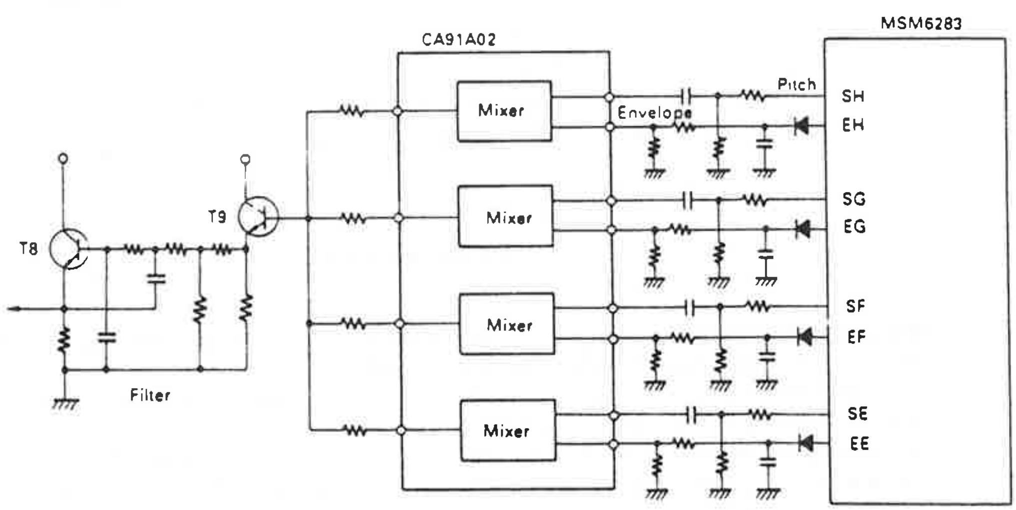
- Generates Pitch and Envelope Signals for Upper Keyboard.
- Controls Keys, Switches and Peripheral Devices.

The following table is the pin functions of the CPU.

Pin No.	Terminal Name	In/Out	Function
1	BGND		5V source for internal ADC (Analog to Digital Converter)
2	VADC		Ground (0V) source for internal ADC
3, 4			Not used
5~11	IO0~IO6	In/Out	Data bus (D0~D6)
12	A0	Out	Address bus (A0)
13	IO7	In/Out	Data bus (D7)
14	A1	Out	Address bus (A1)
15	$\overline{CE}$	Out	Chip enable signal for memory devices. LOW active.
16~18	A2, A10, A3	Out	Address bus (A2, A3, A10)
19			Not used
20~29	A4~9, A11~14	Out	Address bus (A4~A9, A11~A14)
30	A15	Out	Output enable signal for memory devices. LOW active.
31	$\overline{WE}$	Out	Write enable signal for RAM. LOW active.
32~39			Not used
40	GND		5V source
41	CE2		Not used.
42			No function
43	VDD1		Ground (0V) source for internal digital circuit
44	VDD2		Ground (0V) source for internal analog circuit
45~56			Not used
57, 58	OSI , OSO	In/Out	7.277 MHz clock pulse input and output
59	MI	In	Power ON detection signal input. HIGH active. Receiving a pulse at Power ON, CPU starts functioning.
60	RESET	In	Reset signal input. HIGH active. The terminal receives a pulse which resets CPU internal circuit when new batteries or AC adapter is set.
61			Not used.
62	KO14	Out	Not used.

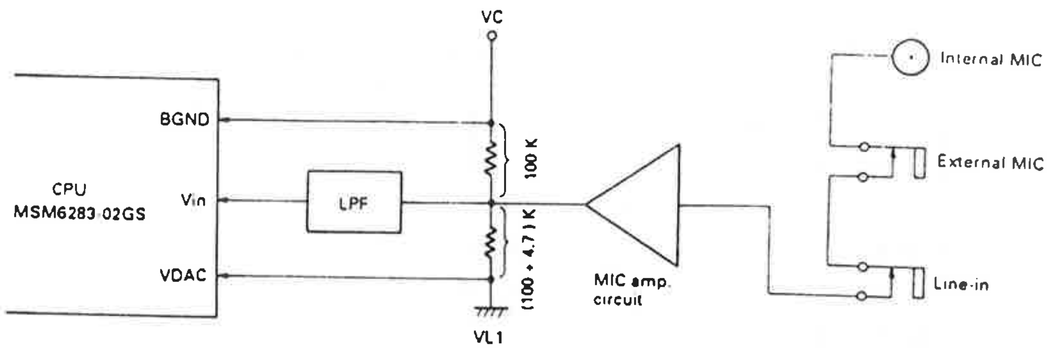
Pin No.	Terminal Name	In/Out	Function
63	KO13	Out	ROM and RAM chip select signal.
64	KO12	Out	APO (Auto Power Off) signal out. Terminal rises HIGH level to shut the voltages off when the unit is not operated for approximately six minutes.
65~76	KO11~KO0	Out	Key common and LED drive signals outputs.
77~84	K11~K18	In	Key input signals
85	PO0	Out	Not used.
86~88	PO1~PO3	out	Not used.
89~92	EH~EE	Out	Envelope signals for upper voices.
93~96	SH~SE	Out	Pitch signals for upper voices.
97			Not used
98	AGND		+5V source for DAC (Digital to Analog Converter)
99	VDAC		Ground (0V) source for DAC
100	Vin	In	Sampling sound input signal from MIC terminal

PITCH/ENVELOPE MIXER

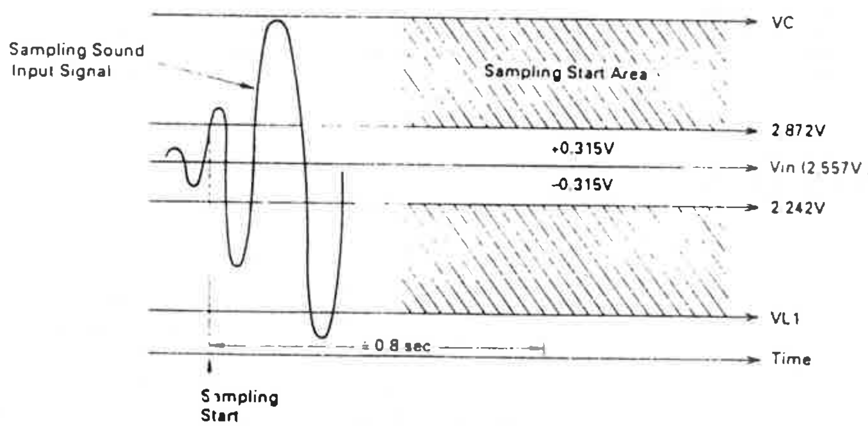


The upper keyboard is 4-note polyphonic.
Each voice's envelope and pitch signals are separately provided from the CPU.
Containing four mixing amp., CA91A02 merges the envelope and the pitch signals.

SAMPLING CIRCUIT



Sample Sound Input Circuit



Vin Input Trigger Level

The circuit provides sampling signals to the Vin terminal of the Upper CPU. Resistors 100K ohm and (100 + 4.7) kohm bias the sampling signal on 2.863V.

When the sampling sound level exceeds ±0.315V the CPU starts to transmit the sampling sound data to the RAMs during the following period.

While sampling, the CPU transmits the sampling sound data to the sampling RAMs directly.

While sampling, CPU does not output key common signals (KO0~KO9) so that the keyboard becomes inoperative.

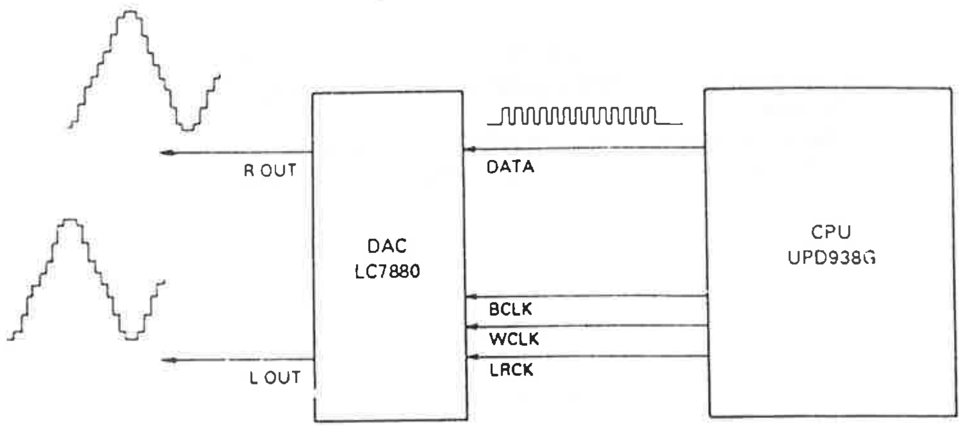
Sampled sounds are digitized in CPU and transmitted to the RAM.

LOWER CPU (UPD938G) PIN FUNCTIONS

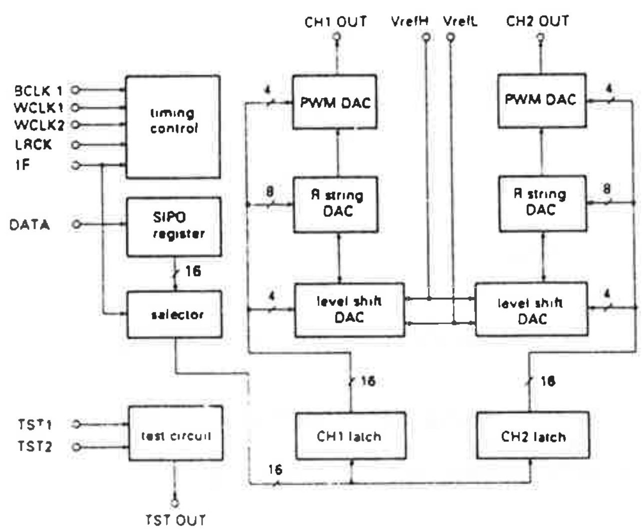
Pin No.	Terminal	In/Out	Function
1	VDD2	—	+5.9V power source for the LSI. While power switch is turned on, the terminal receives +5.9V.
2	$\overline{POFF}$	Out	Power OFF signal output. When power switch is OFF, the terminal drops to low level turning externally connected transistors off to shut VDDf2 (pin 1) off.
5	RESET1	In	CPU reset signal input. When batteries are set or an AC adaptor is inserted, the terminal receives a signal. CPU then initializes its internal circuits.
6	MI	In	Power ON triggers pulse input. When the power switch is turned on, the terminal receives a differential pulse (‾Y‾). Receiving this signal, the CPU starts functioning.
8, 9	COSI, COSO	In/Out	21.7248 MHz clock pulse input/output. Varing this frequency changes the tune (pitch).
10	VDD1	—	+5.9V power source. No matter the power switch position, the terminal always receives +5.9V.
11	MPG	Out	4 MHz clock pulse check terminal. As direct touch of an oscilloscope probe may stop the oscillation, use this terminal for checking 4 MHz clock pulse (pins 13 and 14).
12	GND	—	Ground (0 V) source.
13, 14	MOSI, MOSO	In/Out	4 MHz clock pulse for rhythm tempo.
17	MOUT	—	Not used.
18	MIN	—	Not used.
19	KO0	Out	Clock pulse for LED latch. At the rising edge of this pulse, LED data is kept in the LED latch.
22	KO3	Out	LED drive signal.
23~30	KI8~KI1	In	Keys and switches input terminals
31	KO22	Out	APO (Auto Power Off) signal output. When the keyboard is left unoperated for six minutes, the signal drops to LOW level shutting the voltages AVDD and DVDD off in the Power IC CA6722.
32~49	KO21~KO4	Out	By the time sharing, these signals function as key and switch scanning, and LED driving.
50~60	$\overline{WE1}$~D7	—	Not used.
61~76	IO0~IO15	In	Data inputs from the ROM
78~95	AR0~AR17	Out	ROM's address bus
96	AR18	out	ROM's chip enable signal. LOW effective.

Pin No.	Terminal	In/Out	Function
100	$\overline{CE}$	Out	ROM's out enable signal. When LOW, the ROM is able to output data.
105	MCLK	Out	Check terminal for main clock. Outputting 2.7156 MHz (1/8 of 21.7248 MHz) pulse, this terminal is used for checking the main clock pulse generator.
107	BCLK	Out	DAC's bit clock. Timing pulse for writing serial digital audio data in DAC. Provides one pulse per one bit of digital audio data.
109	SWD1 (DATA)	Out	Serial digital audio data. By the time sharing, this terminal provides 16-bit serial data for the right and the left channels' tone, percussion, chord, and bass sounds.
111	WCLK	Out	Word clock pulse for the DAC. At the falling edge of this signal, 16-bit serial sound data is latched in the DAC.
112	LRCK	Out	Left/Right channels separation signal. As the serial sound data contains right and left channels sounds, the voltage level of this signal determines the output channel of DAC. High : Left channel Low : Right channel
114	VRT	In	High level reference voltage for the built-in ADCs (Analog to Digital Converters). Connected to DVDD (+5 V).
115	ADVDD	In	+5 V power source for the built-in ADCs.
116	Vin0~Vin2	In	Analog inputs for the built-in ADCs. Not used.
119	ADGND	In	Ground for the built-in ADCs.
120	VRB	In	Low level reference voltage for the built-in ADCs.

DAC (Digital to Analog Converter; LC7880)



Data output from CPU is 16-bit serial signals containing digital sound data of melody, chord, bass, and percussion for the right and the left channels. LC7880 converts the 16-bit serial sound data into analog waveforms and outputs the right and the left channels waveforms separately.



LC7880 Block Diagram

(1) Data reading

Digital audio data is 16-bit serial signals of 2's complement.

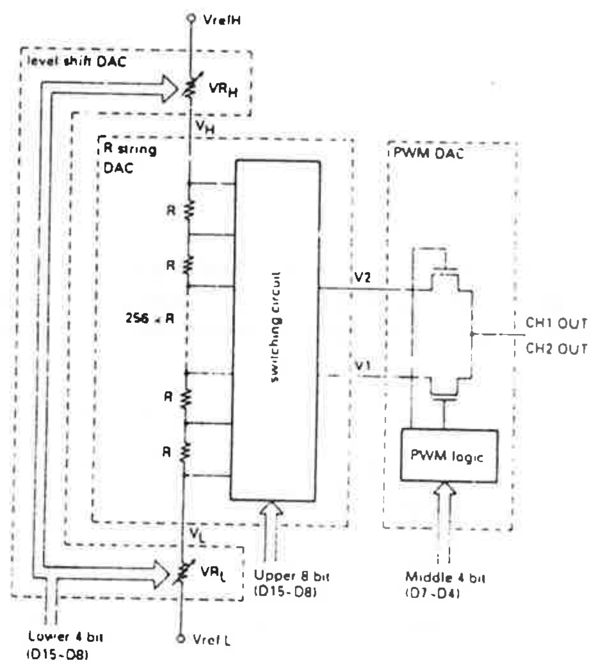
In accordance with the voltage level of terminal IF, LC7880 is able to read either MSB first data or LSB first data.

Since the CPU's DATA output is MSB first data, the terminal IF is connected to HIGH level.

Synchronized with the rising edge of BCLK, digital audio signal from DATA terminal is stored in SIPO register.

At the falling edge of word clock WCLK1, the data is latched in either CH1 latch or CH2 Latch. The channel selection is done by signal LRCK (HIGH; CH1, LOW; CH2).

(2) D/A conversion



LC7880 D/A Conversion Block for One Channel

LC7880 contains two each of R-string DAC, PWM (Pulse Width Modulation) DAC, and Level Shift DAC for the right and the left channels.

After being latched, 16-bit digital audio signal is separated in three blocks and each block data is sent to a certain DAC.

Upper 8 bits (D15-D8)— To R-string DAC
Middle 4 bits (D7-D4) — To PWM DAC
Lower 4 bits (D3-D0) — To Level Shift DAC

① R-string DAC

By means of connecting 256 (2^8) pieces of unit resistors in serial, voltages VH and VL applied to both ends of the resistors are divided in 256 steps. Potential difference at both ends of one unit resistor R is VH-VL/256. The upper 8 bits of signal DATA turn the switches in switching circuit and extracts a voltage level.

② PWM (Pulse Width Modulation) DAC

The potential difference V2–V1 of R-string DAC is further divided in 16 steps in PWM DAC. The division is controlled by the middle 4 bits (D7–D4).

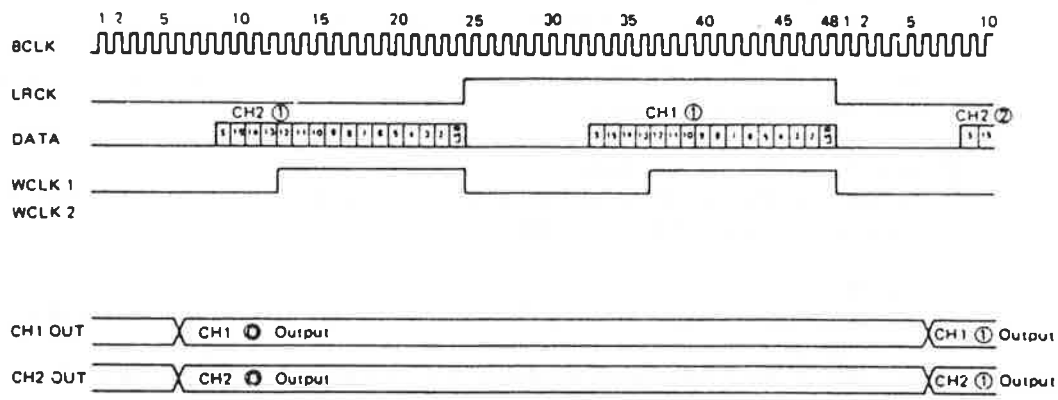
③ Level Shift DAC

The resistances of variable resistors VRH and VRL are varied by the lower 4 bits of signal DATA (D3-D0).

By means of varing the potential difference between VrefH and VrefL, R-string DAC's output voltage for the minimum step is further controlled.

LC7880 Pin function

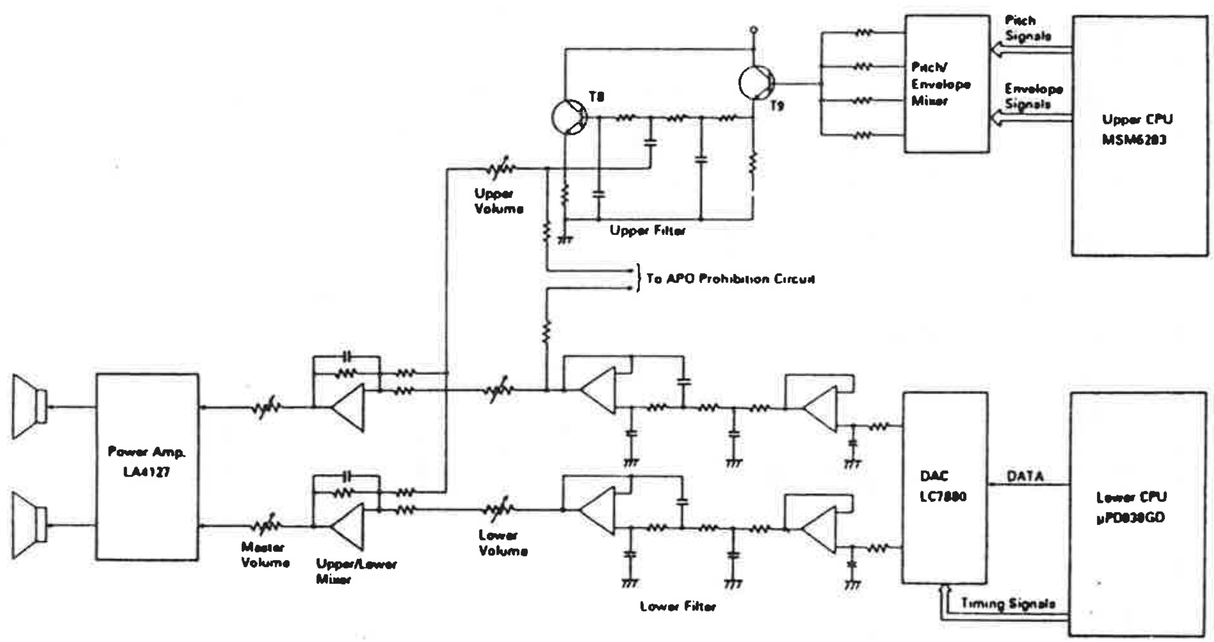
Pin No.	Terminal	Function
1	L OUT	Channel 1 output. Provides left channel sounds.
2	V ref H	High level reference voltage. Connected to AVDD (+5 V)
4	VCC	+5 V source
5	WCLK2	Not used. Connected to AG (0 V).
6	LRCK	Left/right channels separation signal. As signal DATA contains both channels' sounds, the voltage level of this terminal separates the channels. High .... Left channel Low .... Right channel
7	WCLK1	Word clock terminal. At the falling edge of this signal, signal DATA is latched in either CH1 Latch or CH2 Latch.
8	DATA	16-bit serial digital audio signal input.
9	BCLK	Bit clock pulse terminal. Timing pulse for reading DATA signal. Also clock pulse for PWM DAC.
10	VCC	+5 V source
14	IF	LSB/MSB first signal selection terminal. Voltage level of this terminal determines the format of signal DATA. High .... MSB first data Low .... LSB first data The format of DATA is MSB first on this model, this terminal is connected to AVDD (+5 V).
15	GND	Ground (0V) source
16	V ref L	Low level reference voltage. Connected to AG (0V).
17	GND	Ground (0V) source
20	R OUT	Channel 2 output. Provides right channel sounds.



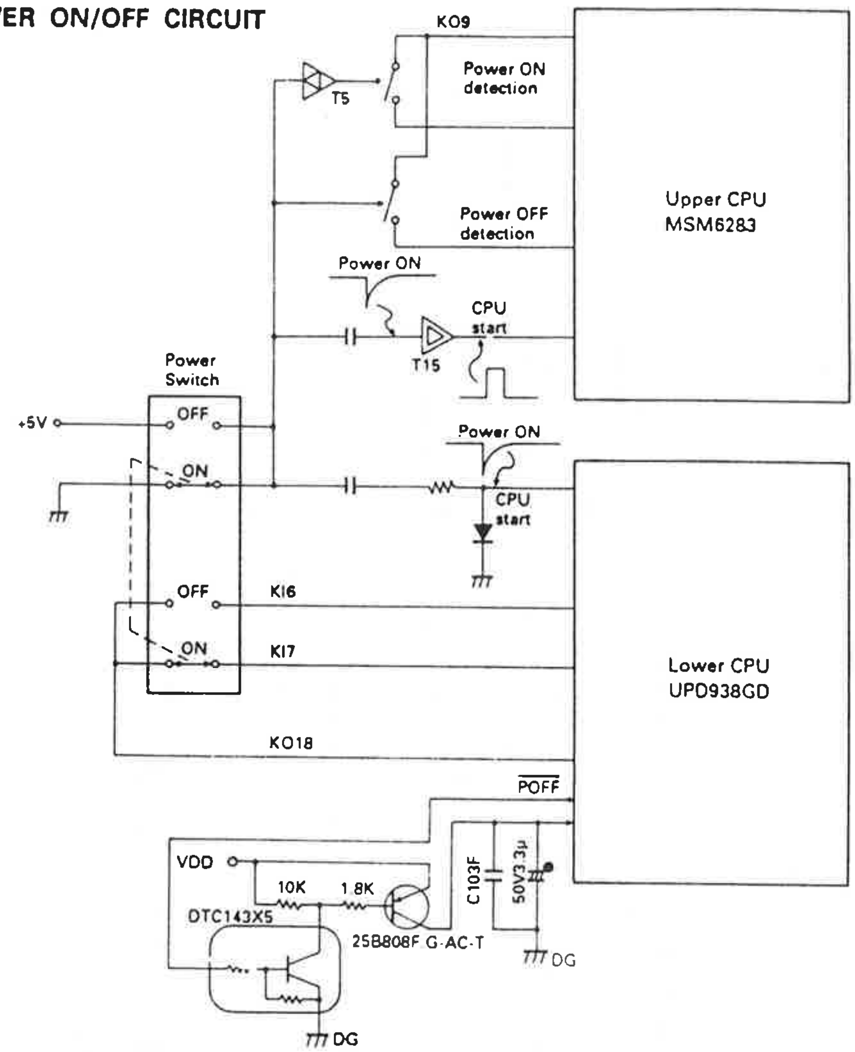
Timing Chart

LINEAR CIRCUITS

Upper and Lower voices from Pitch/Envelope Mixer and DAC are filtered, mixed, and amplified in the linear circuits.



POWER ON/OFF CIRCUIT



Upper and Lower CPUs start the power ON se...ences when they receive pulses from terminal MIs. When the power switch is turned ON, a low level differential pulse is provided to terminal MI of Lower CPU.

Since Upper CPU functions in the negative logic, the differential pulse is inverted by transistor T15. Each CPUs determine the power switch's set position by receiving a certain key scan signal from a certain terminal.

While power switch is turned on, Lower CPU provides High level from terminal $\overline{POFF}$. Being High of signal $\overline{POFF}$ turns the transistors on and VDD (+5.9 V) is provided to a power source terminal VDD2.Receiving scan signal KO18 from terminal KI6, the Lower CPU detects the OFF position of power switch. Lower CPU then drops the voltage level of terminal $\overline{POFF}$ Low causing the transistors to be turned off.

Since +5.9 V is not provided from terminal VDD2,Lower CPU stops functioning.

KEY MATRIX

The upper and the lower keys and switches are controlled by Upper and Lower CPUs separately.

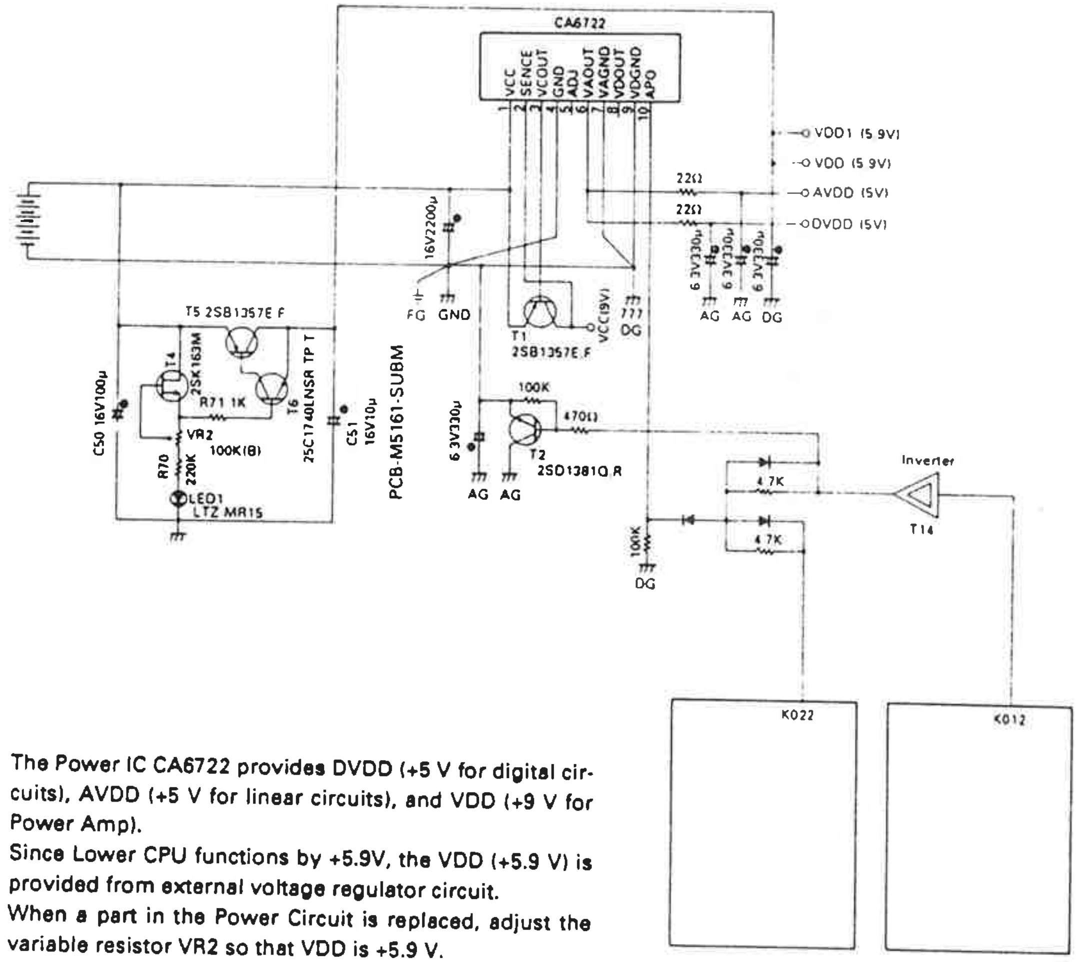
Upper Keyboard

	KI1 (UKI1)	KI2 (UKI2)	KI3 (UKI3)	KI4 (UKI4)	KI5 (UKI5)	KI6 (UKI6)	KI7 (UKI7)	KI8 (UKI8)
K01 (UK01)					F1	F♯1	G1	G♯1
K02 (UK02)	PIANO	VIBRA-PHONE	PIPE ORGAN	VIOLIN	A1	A♯1	B1	C2
K03 (UK03)	TRUMPET	FLUTE	CLARINET	GUITAR	C♯2	D2	D♯2	E2
K04 (UK04)	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	F2	F♯2	G2	G♯2
K05 (UK05)				EFFECT SELECT	A2	A♯2	B2	C3
K06 (UK06)	SAMPLING	SAMPLING LONG			C♯3	D3	D♯3	E3
K07 (UK07)					F3	F♯3	G3	G♯3
K08 (UK08)					A3	A♯3	B3	C4
K010 (UK010)							TUNE DOWN	TUNE UP

Lower Keyboard

	KI1	KI2	KI3	KI4	KI5	KI6	KI7	KI8
K04	TEMPO DOWN	TEMPO UP	C1	C♯1	D1	D♯1	E1	F1
K05			F♯1	G1	G♯1	A1	A♯1	B1
K06			C2	C♯2	D2	D♯2	E2	F2
K07			F♯2	G2	G♯2	A2	A♯2	B2
K08	TONE BANK		C3	C♯3	D3	D♯3	E3	F3
K09			F♯3	G3	G♯3	A3	A♯3	B3
K010			C4	C♯4	D4	D♯4	E4	F4
K011			F♯4	G4	G♯4	A4	A♯4	B4
K012			C5					
K013								
K014	LOWER TONE SELECT	RHYTHM SELECT		SYNCHRO/ FILL IN	START/ STOP	INTRO/ ENDING	ROCK	8 BEAT
K015	16 BEAT	DISCO	POPS	SLOW ROCK	SWING	SAMBA	BOSSA NOVA	WALTZ
K016	PIANO	HARPSI-CHORD	VIBRA-PHONE	JAZZ ORGAN	PIPE ORGAN	BRASS ENS.	FLUTE	CHORUS
K017	BELLS	PURCUS-SION						
K018	CHORD OFF	CHORD FING'D 1	CHORD FING'D 2	CHORD ON		POWER OFF	POWER ON	
K019								
K020	ACCOMP. VOLUME 0	ACCOMP. VOLUME 1	ACCOMP. VOLUME 2	ACCOMP. VOLUME 3	ACCOMP. VOLUME 4			
K021	ACCOMP. VOLUME 0	ACCOMP. VOLUME 1	ACCOMP. VOLUME 2	ACCOMP. VOLUME 3	ACCOMP. VOLUME 4			

POWER CIRCUIT



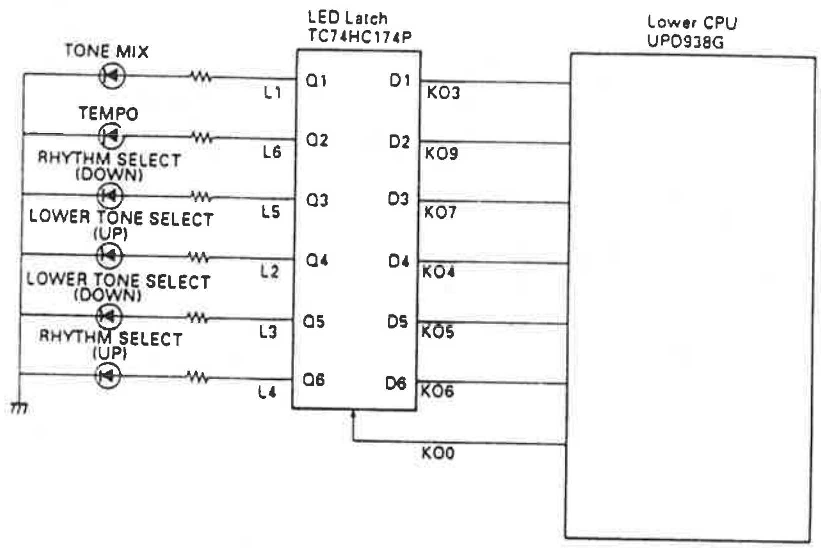
The Power IC CA6722 provides DVDD (+5 V for digital circuits), AVDD (+5 V for linear circuits), and VDD (+9 V for Power Amp).

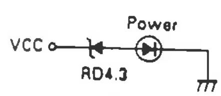
Since Lower CPU functions by +5.9V, the VDD (+5.9 V) is provided from external voltage regulator circuit.

When a part in the Power Circuit is replaced, adjust the variable resistor VR2 so that VDD is +5.9 V.

When the keyboard is not played for more than six minutes, both Upper and Lower CPUs provide APO signal to shut DVDD and AVDD off.

LED DRIVING


LED Latch
TC74HC174P
Lower CPU
UPD938G
TONE MIX
TEMPO
RHYTHM SELECT
(DOWN)
LOWER TONE SELECT
(UP)
LOWER TONE SELECT
(DOWN)
RHYTHM SELECT
(UP)
L1
L6
L5
L2
L3
L4
Q1
Q2
Q3
Q4
Q5
Q6
D1
D2
D3
D4
D5
D6
KO3
KO9
KO7
KO4
KO5
KO6
KO0


Power
VCC
RD4.3

TROUBLESHOOTING

Trouble	Faulty block	Checkpoint
No power (Pilot lamp does not light)	Power IC (CA6722)	Pin 2 should be +9 V
	Transistor T1	Collector should be +9 V
	Power jack	Check for open circuit of power jack of poor soldering.
No sound at all	VDD Regulator	T5 collector should be +5.9 V.
	Power IC (CA6722)	Pin 6 voltage should be +5 V.
	Upper or Lower CPU (MSM6283 or UPD938GD)	Either CPU may be providing APO signal to Power IC
	Power Amp. (LA4127)	
Upper keyboard no sound	PG1	Pins 63 and 64 of Upper CPU (MSM6283)
	Upper Reset Circuit	
	Transistor T15	Collector should provide a pulse (_⎍_) at Power ON.
	Upper CPU (MSM6283)	
	Upper ROM (UPD23C256EAC)	
	Upper RAM (UPD43256C-12L)	
	Pitch/Envelope Mixer (CA91A02)	Pins 1, 8, 11, 18 should provide sound waveforms.
	Upper Filter	T8 emitter waveform
Lower keyboard no sound	PG2	Pin 105 waveform of Lower CPU (UPD938GD)
	Lower Reset IC (S-8053)	Pin 5 of Lower CPU (UPD938) should receive Low level signal at battery or adaptor set.
	Power OFF Circuit	Collector of T21 should be +5 V.
	Lower CPU (UPD938GD-001)	
	Lower ROM (HN62404PD27)	
	DAC (LC7880)	Pins 1 and 20 output waveforms
	Lower Filter Block	
No accompaniment	PG3	Pin 11 waveform
	Lower ROM (HN62404PD27)	
	Lower CPU (UPD938GD-001)	
Certain keys of switches do not function	Key/Switch matrix	Check for open circuit on KI or K0 line
A certain key does not function	Key contact	Dust on the contact

PARTS LIST

DM-100

Notes:
1. Prices and specifications are subject to change without prior notice.
2. As for spare parts order and supply, refer to the "GUIDE BOOK for Spare Parts Supply", published separately.
3. The numbers in item column correspond to the same numbers in drawing.

DM-100 Parts List

Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price Code	Rank
1) M4134MA1M, 2M, 3M CN3M PCB ASS'Y							
	20102247	LSI	MSM6283-05	1		BB	A
	20102394	LSI	UPD23C256EAC-029	1		AR	A
	20105040	LSI	MSM51257L-12, 15RS	1		AY	A
	20105474	LSI	HN62404PD027	1		BE	A
	20105635	LSI	UPD938GD-001	1		BR	A
	21003549	MOS IC	TC4066BP	1		AF	A
	21004740.	C-MOS IC	TC74HC32P	1		AE	A
	21050035	C-MOS IC	TC74HC174P	1		AE	A
	21050798	C-MOS IC	LC7880	1		AX	A
	21050812	C-MOS IC	TC74HC123P	1		AE	A
	21140007	Monolithic IC	BA4558CA	3		AD	A
	21140070	Monolithic IC	LA4127	1		AI	A
	21140252	Monolithic IC	CA91A02	1		AI	A
	21141176	Monolithic IC	CA6722	1		AI	A
	21201146	Monolithic IC	M5218PR	2		AE	A
	22004409	Transistor	2SA933-SQ-TP-T	1		AD	A
	22201425	Transistor	2SC1740LNSR-TP-T	3		AD	A
	22500126	Digital transistor	2SA1565-AC-T	2		AD	A
	22510273	Transistor	2SB1357E, F	1		AD	A
	22510287	Digital transistor	2SC4049-AC-T	3		AD	A
	22590147	Digital transistor	DTC143XS-TP-T	1		AD	A
	22530154	Transistor	2SD1381Q, R	1		AD	A
	23010241	Diode	1SS254T-77-T	22		AA	C
	23107848	Zener diode	RD4.3ESB2-T1-T	1		AA	B
	23400022	Variable capacitor	SVC321	1		AE	B
	23600903	Zener diode	RD4.7JSB3-T1-T	1		AA	B
	23700133	LED	LN275RPX	1		AC	A
	23900112	Vari capacitor	SVC201SPA	1		AD	B
	23900378	Diode	1SRf139-100T-32-T	2		AB	C
	25900483	Ceramic oscillator	EFO-FC4006A3	1		AH	A
	26075035	Carbon film resistor	ELR50X-68-J-T34V-T	2		N/A	C
	26170028	Carbon film resistor	R-20-100-J-T24-T	3		N/A	C
	26170036	Carbon film resistor	R-20-220-J-T24-T	1		N/A	C
	26170052	Carbon film resistor	R-20-1K-J-T24-T	22		N/A	C
	26170061	Carbon film resistor	R-20-2.2K-J-T24-T	8		N/A	C
	26170087	Carbon film resistor	R-20-4.7K-J-T24.7	3		N/A	C

Notes:

Q'ty — Quantity used per unit
— The minimum order and supply quantity

Rank A: Essential
B: Stock recommended
C: Others
X: No stock recommended

DM-100 Parts List

Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price Code	Rank
	26170095	Carbon film resistor	R-20-10K-J-T24-T	31			C
	26170117	Carbon film resistor	R-20-47K-J-T24-T	6			C
	26170125	Carbon film resistor	R-20-68K-J-T24-T	7			C
	26170133	Carbon film resistor	R-20-82K-J-T24-T	1			C
	26170141	Carbon film resistor	R-20-100K-J-T24-T	12			C
	26170150	Carbon film resistor	R-20-150K-J-T24-T	2			C
	26170168	Carbon film resistor	R-20-220K-J-T24-T	4			C
	26170176	Carbon film resistor	R-20-1M-J-T24-T	1			C
	26170192	Carbon film resistor	R-20-1.8K-J-T24-T	1			C
	26170203	Carbon film resistor	R-20-470K-J-T24-T	1			C
	26170206	Carbon film resistor	R-20-39K-J-T24-T	2			C
	26170246	Carbon film resistor	R-20-12K-J-T24-T	6			C
	26170249	Carbon film resistor	R-20-470-J-T24-T	1			C
	26170271	Carbon film resistor	R-20-5.6K-J-T24-T	1			C
	26170273	Carbon film resistor	R-20-22-J-T24-T	3		N/A	C
	26170289	Carbon film resistor	R-20-15K-J-T24-T	8			C
	26170297	Carbon film resistor	R-20-22K-J-T24-T	6			C
	26170301	Carbon film resistor	R-20-56K-J-T24-T	6			C
	26170335	Carbon film resistor	R-20-56-J-T24-T	1			C
	26170360	Carbon film resistor	R-20-1.5K-J-T24-T	2			C
	26170378	Carbon film resistor	R-20-3.9K-J-T24-T	1			C
	26170386	Carbon film resistor	R-20-330-J-T24-T	6			C
	26170459	Carbon film resistor	R-20-27K-J-T24-T	1			C
	26170467	Carbon film resistor	R-20-68-J-T24-T	1			C
	27650280	Slide VR	EWA-NAXCH1814	2		AG	B
	27706860	VR	K121KOZ1B-100KB	2		AD	B
	27709737	Slide VR	EWANFTCH1814	1		AE	B
	28017189	Electrolytic capacitor	50RE2-R33-T14-T	4			C
	28017910	Electrolytic capacitor	16RE3-470-T2-T	2			C
	28018134	Electrolytic capacitor	16RE2-22-T14-T	4			C
	28018141	Electrolytic capacitor	16RE-2200-S1	1			C
	28045972	Electrolytic capacitor	16RE2-100-T14-T	8			C
	28053142	Electrolytic capacitor	16RE2-10-T2-T	10		N/A	C
	28053215	Electrolytic capacitor	16RE2-47-T14-T	6			C
	28070934	Electrolytic capacitor	16RE2-220-T14-T	2			C
	28070942	Electrolytic capacitor	6.3RE2-220-T2-T	4			C
	28071155	Electrolytic capacitor	50RE2-1 T14-T	11			C

Notes: ☆ — New parts
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DM-100 Parts List

Item	Code No.	Parts Name	Specification	Q'ty	*	Price Code	Rank
	28130161	Ceramic capacitor	RT-HE60TKCH430J-T	1			C
	28130560	Semi-conductive capacitor	DD408SR104K16-T	15			C
	28130609	Ceramic capacitor	RT-HE90TKCH131J-T	1			C
☆	28131148	Semi-conductive capacitor	DD406SR473K16-F	1			C
☆	28131218	Semi-conductive capacitor	DD404SR222K16-T	3			C
☆	28131225	Semi-conductive capacitor	DD404SR562K16-T	2			C
☆	28131260	Semi-conductive capacitor	DD404SR103K16-F	1			C
☆	28131267	Semi-conductive capacitor	DD404SR682K16-F	1			C
☆	28131274	Semi-conductive capacitor	DD405SR223K16-F	1		N/A	C
☆	28131281	Ceramic capacitor	HE50TJCH330J	1			C
☆	28131288	Ceramic capacitor	HE70TJCH820J	1			C
☆	28131295	Ceramic capacitor	HE80TJCH121J	1			C
☆	28180365	Ceramic capacitor	RT-HE50TKYB102K-T	8			C
☆	28180390	Ceramic capacitor	RT-HE40TKYB220K-T	9			C
☆	28180411	Ceramic capacitor	RT-HE40TKYB331K-T	2			C
☆	28181256	Ceramic capacitor	RT-HE40TKSL100D-T	2			C
☆	28182082	Ceramic capacitor	RT-HE70TKYF103Z-T	20			C
☆	28183305	Ceramic capacitor	RT-HE50TKCH270J-T	1			C
☆	28190557	Ceramic capacitor	RT-HE50TKSL101K-T	2			C
	28306229	Mylar capacitor	AMZV-104K50-T	2			C
	28450021	Three polarity capacitor	DS306-56B222M	6			C
	30202147	Ferrite beads	BL02RN2-R62	10		AB	C
	30250063	EMI filter	DST306-56FZ103Z	1		AC	C
	34200050	Slide SW	SSE-22FP	1		AD	B
	35010070	DC jack	HEC2305-01-030	1		AC	B
	35124365	Pin jack	YKB11-0098	2		AB	B
	36120665	Phone jack	YKB21-5006	1		AE	B
	36120711	Miniature jack	YKB21-5101	1		AE	B
	38410007	Coil	L10P-7L	1		AC	B
☆	38410476	Coil	L2P-7L	1		AD	B
☆	38501216	MOS IC	S8053AJ.R	1		AF	A

Notes: ☆ — New parts
Q'ty — Quantity used per unit
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DM-100 Parts List

Item	Code No.	Parts Name	Specification	Q'ty	*	Price Code	Rank
2) M5161-SUB PCB ASS'Y							
	22201425	Transistor	2SC1740LNSR-TP-T	1		AD	A
	22401068	FET	2SK163M-T	1		AD	A
	22510301	Transistor	2SB1357SSY2E,F	1		AD	A
	23700119	LED	LTZ-MR15T-77-T	1		AB	B
	26170036	Carbon film resistor	R-20-220K-J-T24-T	1		--	C
	26170052	Carbon film resistor	R-20-1K-J-T24-T	1		--	C
	26170265	Carbon film resistor	R-20-10-J-T24-T	1		--	C
	27602231	Semi-fixed resistor	V8K4-11B100K	1		--	B
	28053142	Electrolytic capacitor	16RE2-10-T2-T	1		--	C
	28071082	Electrolytic capacitor	16RE2-100-T2-T	1		--	C
3) M4134-CN1M PCB ASS'Y							
	23010101	Diode	1S2473-T-77-T	23		AA	C
	23700133	LED	LN275RPX-(TT2)	5		AC	A
☆	37251239	PC joiner M134D	JSF00-29-130M	1		AD	B
☆	37251246	PC joiner M134F	JSF00-8-130M	1		AE	B
4) M4134-CN2 PCB ASS'Y							
	23700133	LED	LN275RPX-(TT2)	1		AC	A
☆	37251358	PC joiner M134I	JSF00-17-40	1		AE	B
5) M4134-CN4 PCB ASS'Y							
☆	37251253	PC joiner M134G	JSF00-8-120M	1			B
6) M322M-KY1M PCB ASS'Y							
	23010241	Diode	1SS254T 77-T	32		AA	C
☆	37251267	PC joiner M134A2	JSF00-12-110M	1		AD	B

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DM-100 Parts List

Item	Code No.	Parts Name	Specification	Q'ty	*	Price Code	Rank
7) M492M-KY1M PCB ASS'Y							
	23010275	Diode	1SS176-TPA7-T	49		AA	C
☆	43075222	Blank PCB M492-KY1M	M1971B-1	1		--	X
8) UPPER CASE ASS'Y							
☆ 1	38310259	Speaker	EAS-10P289F	2		AM	A
☆	37251232	PC joiner M134A1	JSF50-15-180M	1		--	B
2	69095880	SL contact 12S	CSB-12S	1		AD	B
3	69095890	SL contact 12D	CSB-12D	1		AD	B
☆ 5	69142030	K rubber 253C	M310205-1	2		AD	B
☆ 6	69143820	Key top 134 set	M310361*1	1		AE	B
☆ 7	69143830	K rubber 134A	M310311-1	1		AC	B
☆ 8	69143840	K rubber 134B	M410270-1	3		AC	B
☆ 9	69143850	K rubber 134C	M410271-1	1		AD	B
☆ 10	69143860	Rubber button 134	M310312-1	1		--	C
☆ 12	69143880	Slide knob 90	M31032-23	4		AC	C
☆ 13	69143890	Slide knob 90	M31032-24	1		AC	C
☆ 14	69143900	Upper case sub ass'y	M210222*1	1		BN	C
9) MIC 134 ASS'Y							
15	38309021	Condenser MIC	WM-034CY	1		AE	A
16	69070321	Sponge 129	M42612A-1	1		--	X
10) MINI KEYBOARD UNIT 49							
17	69082020	Key set M2S	M42944*1	1		AF	C
18	69082030	Key set M2	M42943*1	1		AH	C
19	69123651	Contact rubber M2	M31904A-1	1		AE	B
20	69123661	Contact rubber M2S	M31905A-1	1		AE	B
☆ 21	69123673	MKB stopper M2	M31902C-1	1		--	X
22	69123683	MKB stopper M2S	M31903C-1	1		--	X
23	69123692	MKB stopper 49A	M42468B-1	2		--	X
24	69123723	KB chassis 49B	M1819C-3	1		--	X
11) KEYBOARD UNIT							
25	69121871	Contact rubber M1.5	M31929A-1	1		AE	B
26	69122552	White key set M2.5S	M1760B-4	1		AJ	C
27	69122590	Black key set M2.5S	M1761-4	1		AJ	C

Notes: ☆ — New parts
Q'ty — Quantity used per unit
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Rank A: Essential
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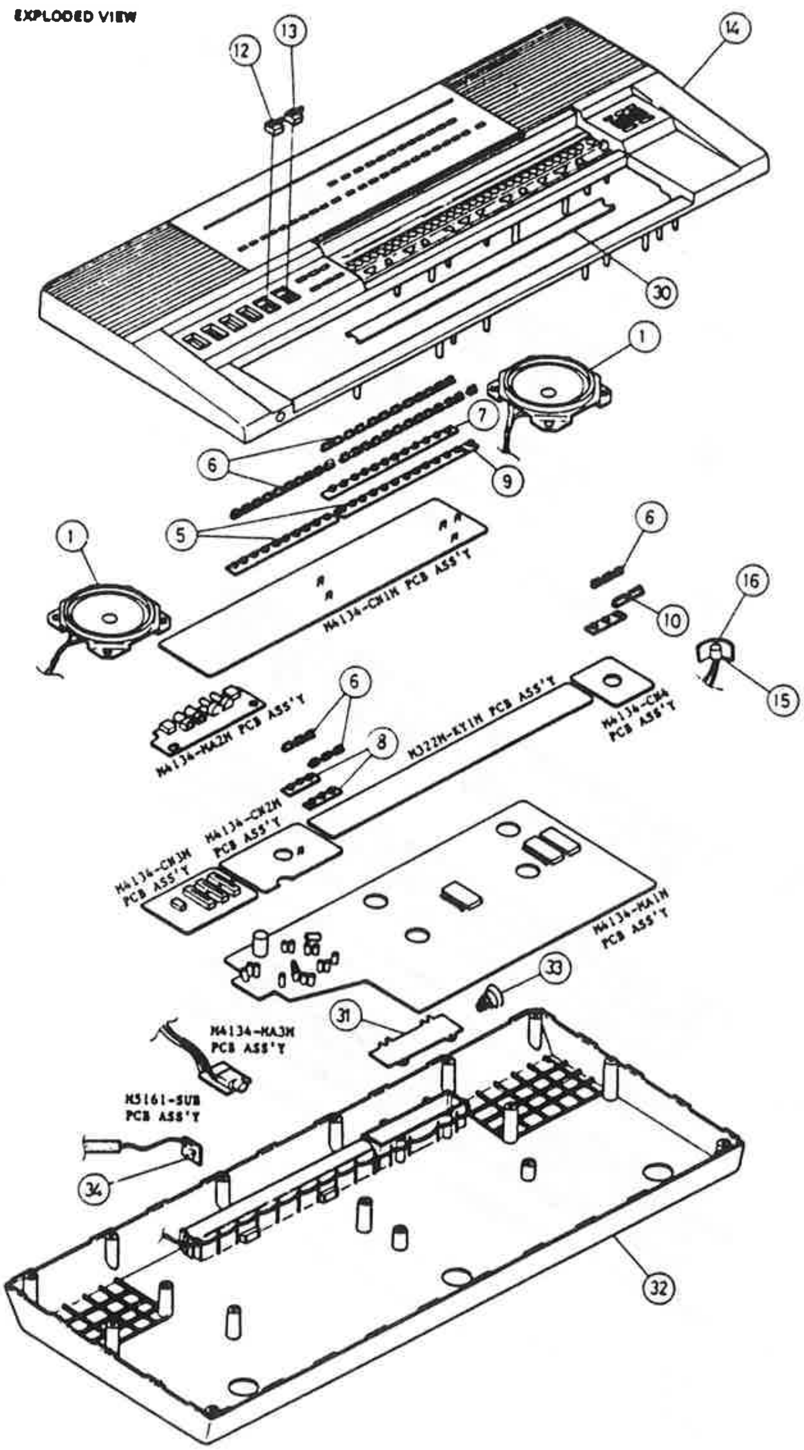
DM-100 Parts List

Item	Code No.	Parts Name	Specification	Q'ty	*	Price Code	Rank
28	69131492	Contact rubber 90B	M31039B-2	1		AD	B
☆ 29	69143910	Key blind	M210167-1	1		– –	X
☆ 30	69143920	Chassis	M210183-1	1		– –	X
12) LOWER CASE ASS'Y							
31	69126098	Battery cover 32 sub ass'y	M3663H*18	1		AH	C
☆ 32	69143751	Lower case sub ass'y	M210234A*1	1		BB	C
33	69026140	Battery spring 90	M41226-1	1		AB	C
34	69000631	Battery spring 90	M4222A-1	1		AB	C

Notes: ☆ — New parts
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DM-100 Parts List



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